

What is claimed is:

1. A method for stabilizing an image formed in an imaging device, wherein the image can be caused to shift in a plane by movement of the imaging device, said method
5 comprising:

providing a deformable lens in the imaging device, said deformation lens having an optical axis, the optical axis at least partially determining a location of the formed image in the imaging device, and

10 applying an electric field on the deformable lens for causing a change in the optical axis so as to compensate for the shifting of the image in the plane caused by the movement of the imaging device.

2. The method of claim 1, wherein the electric field is achieved by two electrode layers, said method further comprising:

15 sectioning at least one of the electrode layers into a plurality of electrode areas so as to allow a voltage applied to one of said electrode areas to be different from a voltage applied to at least another one of said electrode areas.

3. The method of claim 2, wherein the deformable lens comprises a liquid droplet
20 disposed on a substrate adjacent to one of the electrode layers, such that the contact angle of the liquid droplet with substrate is caused to change by the electric field.

4. The method of claim 1, further comprising:

25 computing the image shift in the plane; and
determining the applied electric field based on the image shift.

5. An optical component for use in an imaging device for shifting an image formed on a plane of the imaging device, the optical component having an optical axis at least partially determining a location of the formed image in the imaging device, said optical
30 component comprising:

a compartment having:

a first side and an opposing second side;

a substrate on the first side;

a deformable lens comprising a droplet of a first liquid having a first refractive index disposed along the optical axis on the substrate; and

a second liquid disposed in contact with the droplet, the second liquid having a second refractive index different from the first refractive index;

5 a first electrode layer disposed adjacent the first side of the compartment; and

a second electrode layer, disposed in a cooperative relation with the first electrode layer, for providing an electric field on the deformable lens when a voltage is applied to at least the first electrode layer; wherein the first electrode layer is effectively divided into a plurality of electrode areas to receive the voltage so that the electric field on the
10 deformable lens can cause a change in the optical axis.

6. The optical component of claim 5, wherein the second electrode layer is disposed adjacent to the second side of the compartment.

15 7. An imaging device having an optical axis and an image plane for forming an image on the image plane at a location at least partially determined by the optical axis, said imaging device comprising:

a voltage source; and

an optical compartment having:

20 a first side and an opposing second side;

a substrate on the first side;

a deformable lens comprising a droplet of a first liquid having a first refractive index disposed along the optical axis on the substrate; and

25 a second liquid disposed in contact with the droplet, the second liquid having a second refractive index different from the first refractive index;

a first electrode layer disposed adjacent to the first side of the compartment, the first electrode layer operatively connected to the voltage source; and

30 a second electrode layer, disposed in a cooperative relation with the first electrode layer, for providing an electric field on the deformable lens when a voltage is applied to at least the first electrode layer, wherein the first electrode layer is effectively divided into a plurality of electrode areas to receive the voltage so that the electric field on the deformable lens can cause a change in the optical axis.

8. The imaging device of claim 7, wherein the second electrode layer is disposed adjacent to the second side of the optical compartment.

9. A portable device comprising:

5 a voltage source;

an imaging sensor array; and

an image forming module having an optical axis and an image plane substantially on the imaging sensor array for forming an image on the imaging sensor array at a location at least partially determined by the optical axis, said image forming module comprising:

an optical component comprising:

a first electrode layer operatively connected to the voltage source;

a deformable lens disposed along the optical axis adjacent to the first electrode layer; and

15 a second electrode layer, disposed in a cooperative relation with the first electrode layer, for applying an electric field on the deformable lens, wherein the first electrode layer is effectively divided into a plurality of electrode areas so that the electric field applied on the deformable lens can cause a change in the optical axis.

20 10. The portable device of claim 9, further comprising:

an image processor, operatively connected to the imaging sensor array for receiving signals indicative of the image formed on the imaging sensor array, for determining a shift of the image location due to movement of the portable device, wherein the image processor is also operatively connected to the voltage source for providing a signal indicative of the image shifting to the voltage source so as to allow the voltage source to adjust the electric field such that the optical axis is changed to compensate for the image shifting due to the movement.

30 11. The portable device of claim 10, wherein the image processor comprises a software program for computing voltage levels on the electrode areas so as to allow the voltage source to adjust the electric field based on the voltage levels.

12. The portable device of claim 11, wherein the software program comprises a code for determining a shift of the image location based on the signals received from the imaging sensor array.

5 13. The portable device of claim 9, comprising a mobile terminal.

14. The portable device of claim 9, wherein the deformable lens comprises a droplet of a first liquid having a first refractive index, and wherein the optical component further comprises an optical compartment, the compartment having:

10 a first side and an opposing second side, the first side adjacent to the first electrode layer;

a substrate on the first side for disposing the deformable lens; and

a second liquid disposed in contact with the droplet, the second liquid having a second refractive index different from the first refractive index.

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15. The portable device of claim 14, wherein the second layer is disposed adjacent to the second side of the optical compartment.

16. A software product for use in an imaging device, the imaging device having an optical axis and an image plane for forming an image on the image plane at a location at least partially determined by the optical axis, the imaging device comprising:

20 a voltage source; and

an optical component comprising:

a first electrode layer operatively connected to the voltage source;

25 a deformable lens disposed along the optical axis adjacent to the first electrode layer; and

a second electrode layer, disposed in a cooperative relation with the first electrode layer, for applying an electric field on the deformable lens, wherein the first electrode layer is effectively divided into a plurality of electrode areas so that the electric field applied on the deformable lens can cause a change in the optical axis,

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said software product comprising:

a code for determining a motion-induced image shift on the image plane; and

a code for determining a plurality of voltage levels based on the image shift for providing a signal indicative of the voltage levels to the voltage source so as to allow the voltage source to provide the voltage levels to the plurality of electrode areas for causing the change in the optical axis in order to compensate for the motion-induced image shift.